CLAIMS

I claim:

1. A vacuum lumber drying kiln for drying a stack of lumber, comprising:

a planar base having at least one ledge including a front ledge;

a flexible cover having a sealing base end and covering the stack of lumber forming a kiln;

said sealing base end being sealed to said planar base at said at least at least one edge;

means for supplying heat to said kiln; and

a vacuum pump fluidly connected with said flexible cover;

said flexible cover being supported by said stack of lumber such that said sealing base end seals against said base upon activation of said vacuum pump, thereby creating a vacuum within the drying chamber formed by said flexible cover and said planar base.

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2. The vacuum kiln of claim 1, further comprising a back wall and opposing end walls, said flexible cover being attached to said back wall and extending around the upper and front periphery of said end walls, said sealing base extending to said planar base at said front ledge, said flexible cover sealing against said back wall, said end walls and said front ledge upon activation of said vacuum pump, thereby creating a vacuum within the drying chamber formed by said flexible cover, said back wall, said side walls, and said planar base.

3. The vacuum kiln of claim 2, further comprising a heater having an air intake and a kiln supply conduit, said kiln supply conduit being operatively connected with at least one of said side walls for supplying heated air to said drying chamber formed by said walls, flexible cover, and planar base, said vacuum pump having a greater flow capacity than said kiln supply conduit so as to maintain said drying chamber in a vacuum condition.

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4. The vacuum kiln of claim 3, further comprising perforated inner walls conforming to and spaced inward from said side walls, said side walls and said perforated inner walls defining at least one plenum therebetween for even distribution of heated air from said air heater to the drying chamber formed by said perforated walls, flexible cover, and planar base.

5. The vacuum kiln of claim 4, further comprising a fan support wall spaced inward from said back wall forming a rear chamber and a supporting plurality of ducted fans, said fan support wall supporting said ducts and said fans for drawing air and steam from said drying chamber and exhausting said air and steam into said rear chamber for removal by said vacuum pump.

6. The vacuum kiln of claim 5, wherein there is a plenum formed between each opposing wall and the respective perforated wall and said ducts are sealed to said fan support wall making said rear chamber a connecting chamber between said plenums for fluid communication therebetween.

7. The vacuum kiln of claim 6, further comprising a manifold attached between said rear wall and said vacuum pump and in fluid communication therewith for removing said air and steam from said kiln to the atmosphere.

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8. The vacuum kiln of claim 7, wherein said lumber stack is separated into layers by stickers having ridges thereon for providing circulation of air and steam between said layers of lumber.

9. The vacuum kiln of claim 8, further comprising a plurality of spacing and circulation tubes having open ends and slotted inner sides, said spacing and circulation tubes being located along the front of said lumber stack between each layer of lumber, said slotted inner sides facing inward into the stack such that air and steam may flow between spaces between the lumber layers partitioned by said stickers.

10. The vacuum kiln of claim 9, said planar base being a heating base connected with a source of heat.

11. The vacuum kiln of claim 2, further comprising heating plates located between each respective layer of lumber in said stack of lumber.

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12. The vacuum kiln of claim 11, said heating plates being heated by hot water flowing therethrough and further comprising a water heater, a hot water supply conduit fluidly connected between said water heater and an upper heating plate, a water return conduit connected between a lower heating plate and said water heater, and intermediate plate to plate conduits connecting each respective heating plate in turn, whereby water circulates between said water heater where it is heated, said upper heating plate, said intermediate plates, and said lower plate where heat is transferred to the layers of lumber, and back to said water heater for heating.

13. The vacuum kiln of claim 12, wherein said heated base has a hot water conduit therein and said means for heating said base are said water heater, a hot water supply conduit connected between said water heater and said hot water conduit, and a water return conduit connected between said hot water conduit and said water heater.

14. The vacuum kiln of claim 12, wherein said heating plates are electrically heated.

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15. The vacuum kiln of claim 12, wherein said heating plates are hollow and have perforated upper and lower surfaces, said vacuum kiln further comprising an air heater having an air supply, an air inlet conduit, and a manifold having plate air supply conduits connect to said heating plates, respectively.

16. The vacuum kiln of claim 12, said planar base being a heating base connected with a source of heat.

17. The vacuum kiln of claim 11, said flexible cover covering the stack of wood on all four sides, i.e., the back, each end, and the front side, said planar base having four sides serving as ledges for sealing against the cover base end of said flexible cover, said flexible cover being of such height relative to said stack of wood as to exact atmospheric pressure upon the top lumber layer of the stack upon pulling a vacuum on said kiln.

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18. A method of drying a stack of lumber comprising:

placing a stack of wood on a kiln base;

placing a flexible cover over said stack of lumber and sealing said flexible cover to said kiln base;

pulling a vacuum on said flexible cover as sealed to said kiln base;

providing heat to said kiln while drying said wood;

wherein said flexible cover transmits atmospheric pressure to the upper layer of said stack of lumber upon the pulling of said vacuum, thereby maintaining the lumber in a straight, uncupped condition during drying.

19. The method of claim 18, wherein said heat is provided by hot plates distributed between layers of said lumber in said stack, thereby providing heat to said lumber by direct contact and conduction from said hot plates.

20. The method of claim 18, wherein heated air is provided to said stack of lumber, as separated by stickers, said heated air and steam from the lumber being recirculated through said stack of lumber during the drying process.

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